APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/738,403	12/17/2003	Janakiraman Vaidyanathan	67,097-033; EH-11026	8005

26096 7590 10/04/2007	EXAMINER
CARLSON, GASKEY & OLDS, P.C. 400 WEST MAPLE ROAD SUITE 350 BIRMINGHAM, MI 48009	LEE, JOHN W

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>21 July 2007</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

1.   The response received on 21 July 2007 has been placed in the file and was

considered by the examiner. An action on the merits follows.

Response to Arguments

2.   Applicant's arguments filed on 21 July 2007 have been fully considered, but are

not persuasive. A response to these arguments is provided below.

3.   To response clearly to the applicant's argument, the examiner will discuss and

argue for each paragraph written on a bold font style as follows.

Applicant thanks the Examiner for the detailed analysis and remarks. Claims 1-

16 remain pending in this application.

Claims 1-3, 5, 7-9 and 12-14 were rejected as being obvious over the Shashua

(U.S. 5,821,943) as modified in view of the IEEE paper authored by Park. Claim 1

requires an image processor that breaks a 2D image into geometric elements and

matches scanned 3D images with the geometric elements to generate a model of an

object. Claim 9 requires the steps of breaking a 2D image into geometric elements and

matching a 3D image to the geometric elements to generate the model of the object.

No reason has been identified by the Examiner as to why a person of ordinary skill in

the art would make the proposed combination. The Examiner has merely stated that

such a combination is prima facia obvious. The passage in Park referenced by the

Examiner simply provides a description of uses of structured light scanners, but does

not provide any reason as to why anyone would make the proposed combination. It

remains necessary for the Examiner to identify a reason for the proposed combination to support a proper prima facia case of obviousness. For this reason the proposed combination is improper and should be withdrawn. ¶ **The examiner gave a reason why one of the ordinary skill in the art will combine Park's method in Shashua's invention by the motivation to provide an effective 3-D object bin picking and 3-D object modeling application from accurate and reliable data as suggested by Park (page 66, section 2). Moreover, the examiner's rejection of 35 U.S.C. § 103(a) is also valid based on the rulings of the Supreme Court of *KSR v. Teleflex (KSR v. Teleflex*, 550 U.S. ___ with no questions. According to the rulings of the Supreme Court of *KSR v. Teleflex (KSR v. Teleflex*, 550 U.S. ___ (2007)), the so called teaching, suggesting and motivation test (TSM) is one of a number of valid rationales that could be used to determine obviousness, but not the only rationale that may be relied upon to support a conclusion of obviousness. Shasuha discloses all the claim limitations in claim 1 and 9 except "a scanner that scans ..." and "scanning the object ..." in claims 1 and 9, respectively. However, Park teaches "a Dual-Beam structured-light scanner to scan the object (fig. 3; page 67, section 3.1) used for 3D modeling" that reads on the claim limitations, "a scanner that scans ... " and "scanning the object ...". Thus, it would have been obvious to one of ordinary skill in the art to apply "a Dual-Beam structured-light scanner to scan the object (fig. 3; page 67, section 3.1) used for 3D object modeling" taught by Park to improve Shashua's invention for the predictable result of enabling 3D object modeling. ¶**

Further, both the Park system and the Shashua system disclose methods of

generating a 3D image from 2D data. In the Park system this is accomplished with the

aid of lines projected onto an object. In the Shashua system the 3D image is obtained

from several different 2D images. Accordingly, the two systems both perform the same

function (generating a 3D image), and therefore such a combination would not provide

any benefit to the other. In other words, both the Park and Shashua solve the problem

of generating a 3D image from 2D images utilizing very different methods, and therefore

teach away from the proposed combination. A worker skilled in the art would not

develop a system using various 2D images at different angles as in the Shashua

system, and then add a system as disclosed in Park using one camera and projected

lines on the object. Only one or the other would be utilized, not a combination of both. ¶

Solving the problem of generating a 3D image from 2D of Park and Shashua does

not teach away from the proposed combination. The combination can be valid

according to the rulings of the Supreme Court of KSR v. Teleflex (KSR v. Teleflex,

550 U.S. ___ (2007)) that teaches that the so called teaching, suggesting and

motivation test (TSM) is one of a number of valid rationales which could be used

to determine obviousness, but not the only rationale that may be relied upon to

support a conclusion of obviousness. Shasuha discloses all the claim limitations

in claim 1 and 9 except "a scanner that scans ..." and "scanning the object ..." in

claims 1 and 9, respectively. Morevoere, Shausha discloses the 3D image is

obtained from several different 2D images not by "a scanner that scans ..." and

"scanning the object ..." rectied in claims 1 and 9, respectively.   However, Park

teaches "a Dual-Beam structured-light scanner to scan the object (fig. 3; page 67, section 3.1) used for 3D modeling" that reads on the claim limitations, "a scanner that scans ... " and "scanning the object ...". Because both Shasuha and Park disclose or teach method for generating a 3D image from 2D data, it would have been obvious to one skilled in the art to substitute one method for the other to achieve the predictable result of generating a 3D image from 2D data. ¶

Additionally, all that either Park and Shashua disclose is the creation of a 3D image. Both claims 1 and 9 require the creation of a 3D image, but also require the additional step of matching the 3D image with geometric elements of a 2D image. The disclosures of Park and Shashua do not disclose and cannot suggest this step and feature. Instead, both the Park and Shashua systems and methods conclude upon generating a 3D image. As the ultimate goal of Park and Shashua are to generate a 3D image, the additional claimed steps of claims 1 and 9 cannot be disclosed or suggested. Accordingly, as the proposed combination cannot disclose or suggest all the claimed features and steps, this rejection should be withdrawn. ¶ **Shashua discloses that the 2D images can be analyzed on a geometric level (col. 5, lines 57-58), which means the geometric relation between location of features (points, lines), and the geometrical relations between the corresponding set of 2D points and the set of 3D points is identified (col. 5, lines 66-67; col. 6, line 1-10). The geometric relation between location of features (points, lines) can read on "geometric elements"; identifying the geometrical relations between the corresponding set of 2D points and the set of 3D points can read on the "matching the 3D image with geometric**

elements of a 2D image", for the points are features of the image sets. Therefore, Park and Shashua do disclose and suggest the additional step of matching the 3D image with geometric elements of a 2D image. ¶

Further, neither, Park or Shashua disclose matching scanned 3D data to geometric elements obtained from a 2D image. Further, Shashua does not disclose breaking the 2D image into geometric elements as argued by the Examiner. The Examiner argues that the term "geometric level" discussed in col 5, lines 55-60 of Shashua discloses this feature. However, as is defined in Shashua the "geometric level" term is merely a relation between locations and features. This is not the same as the claimed breaking of the 2D image into geometric elements. Accordingly, the proposed combination is improper for failing to disclose or suggest all the claimed features and should be withdrawn. ¶ **Shashua discloses that the 2D images can be analyzed on a geometric level (col. 5, lines 57-58), which means the geometric relation between location of features (points, lines), and the geometrical relations between the corresponding set of 2D points and the set of 3D points is identified (col. 5, lines 66-67; col. 6, line 1-10). The geometric relation between location of features (points, lines) can read on "geometric elements"; identifying the geometrical relations between the corresponding set of 2D points and the set of 3D points can read on the "matching the 3D image with geometric elements of a 2D image", for the points are features of the image sets. Moreover, because of the points being features of the image sets and geometric elements as discussed above, identifying point features in the image can be a type of breaking the 2D image into**

geometric elements. Therefore, the examiner's combination using Park and Shashua is proper for disclosing or suggesting all the claimed features and will not be withdrawn. ¶

Additionally, Shashua discloses a method and system for generating 3D object data from 2D projections. Park discloses a dual beam structured light scanner for generating coordinates in 3 dimensions. However, neither Shashua or Park disclose or suggest combining a geometric element from a 2D image with a 3D image. In fact, the disclosures in Shashua teach away from use of a 3D scanned image. ¶ **Shashua discloses measuring in the 2D images in order to recover the location of the 3D points, image correspondence to synthesize new view, and a general material of 3D from 2D (col. 5, lines 55-67; col. 6, lines 1-64), which can be parts of a method for combining a geometric element from a 2D image with a 3D image. Moreover, Shashua does not teach away from use of a 3D scanned image. According to the rulings of the Supreme Court of *KSR v. Teleflex (KSR v. Teleflex*, 550 U.S. ___ (2007)) that teaches that the so called teaching, suggesting and motivation test (TSM) is one of a number of valid rationales which could be used to determine obviousness, but not the only rationale that may be relied upon to support a conclusion of obviousness. Shasuha discloses all the claim limitations in claim 1 and 9 except "a scanner that scans ..." and "scanning the object ..." in claims 1 and 9, respectively. Morevoere, Shausha discloses the 3D image is obtained from several different 2D images not by "a scanner that scans ..." and "scanning the object ..." rectied in claims 1 and 9, respectively. However, Park teaches "a**

Dual-Beam structured-light scanner to scan the object (fig. 3; page 67, section

3.1) used for 3D modeling" that reads on the claim limitations, "a scanner that

scans ... " and "scanning the object ...". Because both Shasuha and Park

disclose or teach method for generating a 3D image from 2D data, it would have

been obvious to one skilled in the art to substitute one method for the other to

achieve the predictable result of generating a 3D image from 2D data. Therefore,

Shashua does not teach away from use of a 3D scanned image. ¶

Shashua discloses a method of utilizing 2D data to generate a 3D image. The

methods discussed in Shashua make no mention of scanning or of the projection of

lines onto an object. In fact one use envisioned by the Shashua system is of map

making from aerial or satellite photographs. As appreciated, such a use would not

envision or utilize scanning by projecting lines across an object as is described in Park.

Applicant recognizes that other uses described in Shashua include 3D modeling of

objects and reverse Engineering. However, the same system is envisioned for

application both in the map making and reverse engineering and therefore would teach

away from a combination with scanning. For the reasons discussed above, the

proposed combination of Shashua and Park is improper, and Applicant respectfully

requests withdrawal of this rejection. ¶ **Shashua invention does not teach away from**

a combination with scanning. According to the rulings of the Supreme Court of

KSR v. Teleflex (KSR v. Teleflex, 550 U.S. ___ (2007)) that teaches that the so

called teaching, suggesting and motivation test (TSM) is one of a number of valid

rationales which could be used to determine obviousness, but not the only

rationale that may be relied upon to support a conclusion of obviousness.

Shasuha discloses all the claim limitations in claim 1 and 9 except "a scanner

that scans ..." and "scanning the object ..." in claims 1 and 9, respectively.

Morevoere, Shausha discloses the 3D image is obtained from several different 2D

images not by "a scanner that scans ..." and "scanning the object ..." rectied in

claims 1 and 9, respectively.   However, Park teaches "a Dual-Beam structured-

light scanner to scan the object (fig. 3; page 67, section 3.1) used for 3D

modeling" that reads on the claim limitations, "a scanner that scans ... " and

"scanning the object ...". Because both Shasuha and Park disclose or teach

method for generating a 3D image from 2D data, it would have been obvious to

one skilled in the art to substitute one method for the other to achieve the

predictable result of generating a 3D image from 2D data. Therefore, the

examiner's proposed combination of Shashua and Park is proper, and the

rejection will not be withdrawn. ¶

Claim 4 was rejected as being obvious over Shashua in view of Park and Nasar

et al. (U.S. 5,144,685). Claim 4 requires a processor for matching a 3D image with

geometric elements of a 2D image. For the reasons discussed above with regard to

claims 1 and 9, this feature cannot be suggested or disclosed by the proposed

combination. Even though Naser may disclose a processor, it cannot disclose a

processor the performs the function as claimed. ¶ It has already been discussed

above why it is valid to combine Sahshua and Park for claims 1 and 9. According

to the rulings of the Supreme Court of KSR v. Teleflex (KSR v. Teleflex, 550 U.S.

___ (2007)) that teaches that the so called teaching, suggesting and motivation test (TSM) is one of a number of valid rationales which could be used to determine obviousness, but not the only rationale that may be relied upon to support a conclusion of obviousness. Shasuha and Park discloses all the previous claim limitations of claim 4 except the "first image processor" and "second image processor" recited in claim 4. However, Nasar discloses a first processor, that is connected to a camera to process the images into an image model having segmented regions, extracted objects and features, and a third processor that connected to the first and second processor, that outputs expected site models, to match expected site models and features from the second processor to extracted objects and features from first processor (claim 1). In other words, Naser's disclosure shows that one image processor is used for breaking the image into geometric elements, and another image processor is used for matching the geometric elements. It would have been obvious to one of ordinary skill in the art to use the methods of Sahshua and Park to use one image processor for breaking the image into geometric elements and another image processor for matching the geometric elements taught by Naser. Therefore, the examiner's proposed combination of Shashua, Park, and Naser is proper, and the rejection will not be withdrawn. ¶

Claims 6 and 11, were rejected as being obvious over Shashua in view of Park and Migdal. (U.S. 5,995,650). Claims 6 and 11 are dependent upon an allowable base claim and are therefore also in allowable form. ¶ Since claims 6 and 11 are

dependent on a rejected claim and has claim rejections disclosed on the

examiner's first Office action, claims 6 and 11 is not allowable.¶

Claim 15 was rejected as being obvious over Shashua in view of Park and

Horikawa et al. (U.S. 4,638,156). Claim 16 was rejected as being obvious over Shashua

in view of Park and the thesis by Fabio. Claims 15 and 16 both depend from claim 9 that

is allowable form. Accordingly, claims 15 and 16 are also in allowable form. ¶ **Since**

claims 15 and 16 are dependent on a rejected claim, claim 9, and has claim

rejections disclosed on the examiner's first Office action, claims 15 and 16 is not

allowable. ¶

¶ Based on the examiner's argument and response to the applicant's

argument discussed above, claims 1-16 is not in a condition for allowance.

Therefore, the examiner will not withdrawn the rejections of claim 1-16. ¶

Conclusion

4.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

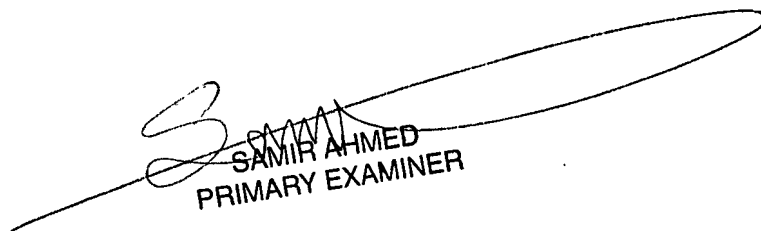extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Wahnkyo Lee whose telephone number is (571) 272-9554. The examiner can normally be reached on Monday - Friday (Alt.) 7:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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PRIMARY EXAMINER